Before the
FEDERAL COMMUNICATIONS COMMISSION
Washington, D.C. 20554

In the Matter of Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers;	WT Docket No. 05-265
Automatic and Manual Roaming Obligations Pertaining to Commercial Mobile Radio Services	WT Docket No. 00-193

Reply Comments of Centennial Communications Corp.

Centennial Communications Corp. ("Centennial") hereby submits its reply comments in this matter.[1]

1. Introduction and Summary.

Most commenters – mainly smaller and regional CMRS providers – support the establishment of some form of automatic roaming requirement.[2] By contrast, the national carriers oppose such a requirement.[3]

From one perspective, this is a classic case of "where you stand depends on where you sit." National carriers are sitting on spectrum that gives them the authority to provide service in major metropolitan areas containing the vast majority of consumers, and much of the rest of the country as well. They see the ability to permit their (mainly urban and suburban) customers to roam into the rural areas they do not serve as perhaps useful, but hardly critical. Smaller carriers, however, have spectrum that inherently limits the areas within which they can provide service. They view the ability to permit their (often rural) customers to roam into the major metropolitan

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[1] Memorandum Opinion & Order And Notice of Proposed Rulemaking, WT Docket Nos. 05-265, 00-193 (released August 31, 2005) ("*Roaming Notice*").

[2] *See, e.g.,* Comments of Centennial Communications Corp.; Comments of Leap Wireless; Comments of SouthernLINC; Comments of the Rural Telecommunications Group, et al. ("RTG Comments"); Comments of Airpeak et al.

[3] Comments of Verizon Wireless; Comments of Cingular Wireless; Comments of Sprint-Nextel; Comments of T-Mobile.

areas ***they*** do not serve as essential – and rightly so. We are not a nation of isolated rural backwaters cut off from the mainstream. Americans – even Americans from rural areas and small towns – travel. They drive, they fly, and they take the train, far from their homes, for business and for pleasure. And when they do, they expect their cell phones to work.

The comments starkly reveal that manual roaming does ***not*** work. Verisign – "the largest provider of manual roaming service in the U.S." – reports that of more than 13 million manual roaming attempts per month, only about 18 thousand calls are actually completed.[4] In other words, 99.8+% of the time, consumers give up when forced to deal with the process of setting up a relationship with the roamed-on carrier. To be sure, even 13 million failed attempts at roaming is a small fraction of total wireless monthly usage of more than 100 billion minutes.[5] Nonetheless, this is an appalling statistic: 13 million failures to complete a telephone call amounts to 300 people ***every minute*** across the country whose calls do not go through – every minute of every hour of every day of every week of every month.[6]

It is not as if this failure to deliver services to millions of consumers could only be remedied by expensive, commercially challenging, or technically difficult measures. The solution is simple and straightforward: require carriers to enter into reasonable automatic roaming arrangements with other carriers using technically compatible systems.

The large carriers argue, essentially, that no real problem exists. They point to retail competition for customers, or claim that an automatic roaming mandate would degrade carrier incentives to build out their own networks. But Verisign's data – not to mention the specific

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4 Verisign Comments at 2.

5 *See* In the Matter of Implementation of Section 6002(b) of the Omnibus Budget Reconciliation Act of 1993 Annual Report and Analysis of Competitive Market Conditions With Respect to Commercial Mobile Services, *Tenth Report*, WT Docket No. 05-71 (Terminated) (released September 30, 2005) ("*10th Wireless Report*"), at ¶ 5 (580 minutes of use per subscriber per month); and Appendix A, Table 1 (180,140,362 subscribers at year-end 2004). Multiplying these figures yields monthly minutes of use of 101,481,409,960.

6 There are 43,200 minutes in a 30-day month (60 minutes/hour x 24 hours/day x 30 days/month). Dividing 13 million failed roaming attempts by 43,200 yields the figure in the text.

problems reported by the smaller carriers[7] – plainly show that there is a genuine problem. There is retail competition, of course, but the existence of that competition does not answer the questions before the Commission: Why are 300 call attempts per minute failing? Why are firms in a "highly" competitive market[8] leaving the revenue from 13 million calls per month on the table?

The issue here is not whether consumers have choices when they sign up for wireless carriers; the issue is whether a consumer who has signed up can obtain service when traveling outside his or her carrier's home service area. As the large carrier-small carrier breakdown among the commenters suggests, the problem arises from the fact that some carriers are licensed to operate on a national basis while others only have regional or local spectrum rights.

The large carriers' arguments about retail competition and build-out incentives, thus, miss the point: some competitors' marketplace options – both where they can compete and where they can build – are constrained by direct regulatory fiat. This is not to say that all carriers should somehow receive automatic national spectrum authorizations. Rather, the Commission should recognize that the limits on licensees imposed by its spectrum policies work subtle legal and regulatory distortions in the marketplace, by creating asymmetric incentives and bargaining power with respect to roaming. As a result, the Commission should take reasonable, procompetitive steps to minimize the ill effects on consumers that those distortions create.

For these reasons, Centennial again urges the Commission to establish a clear requirement that a CMRS carrier must establish reasonable automatic roaming arrangements with any technically compatible system, with the Commission available to mediate and, if necessary, resolve disputes if the carriers cannot agree on reasonable terms. This intervention is really no "intervention" at all – it would not touch the robust, ongoing competition among carriers to sign up new customers. It would, however, ensure that all wireless customers have simple and direct access to wireless services wherever they may travel in the U.S.

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[7] *See, e.g.*, RTG Comments at 10-12; NTCH Comments at 3-4; Leap Wireless Comments at 15; SouthernLINC Comments at 3; Airpeak Comments at 7.

[8] *See* Verizon Wireless Comments at 8.

2. Manual Roaming Doesn't Work.

Large and small carriers alike agree on a critical fact: manual roaming does not work. They come at the matter from different perspectives, however. Large carriers say the manual roaming obligation is an anachronism, no longer necessary because most CMRS licensees have had enough time to build out their own markets.[9] And smaller carriers urge that manual roaming is cumbersome and inconvenient.[10]

The best evidence showing that manual roaming does not work comes from Verisign, with no apparent stake in the large carrier versus small carrier debate. As noted, it reports that only about 18,000 calls are actually completed out of more than 13 ***million*** manual roaming attempts each month.[11] Almost all callers – "more than 12 million" – "usually do nothing when offered a manual roaming option," while another 800,000 "dial a digit, but do not complete a call." It is not hard to imagine a consumer, perhaps driving in heavy traffic or running through an airport, either hanging up in despair (12 million consumers per month) or vainly pressing "0" (800,000 consumers per month) with no response, hoping to get someone to talk to in order for a call to go through. As Centennial observed in its opening comments, the reasons for this frustration are obvious:

> Manual roaming is cumbersome: at a minimum, the first time that the traveling subscriber wants to make a call, the result of pushing the "send" button is not the completed call that the subscriber expects, but instead the need to have a conversation, and perhaps even to fumble with credit cards while driving, in order to establish a payment arrangement with the roamed-on carrier. This is expensive, inconvenient, and – depending on the circumstances – potentially dangerous.

Centennial Comments at 6 (footnote omitted).

Verisign's data, in short, shows a failure rate for manual roaming attempts of 99.8+%. The good news is that even 13 million failed roaming attempts per month is a small fraction of

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9 *E.g.*, Cingular Wireless Comments at 10-18.

10 *E.g.*, Centennial Comments at 6.

11 Verisign Comments at 2.

total wireless monthly usage of more than 100 billion minutes. The bad news is that 13 million failed roaming attempts translates to an average of 300 people ***per minute*** across the country trying and failing to make a wireless call.[12] The Commission should view this as an open scandal – a failure of the marketplace to meet readily addressable consumer needs – calling for improvement in the existing roaming rules.

3. There Is No Procompetitive Reason For National Carriers To Refuse To Establish Automatic Roaming Arrangements.

a. The Commission May Require Automatic Roaming.

At the outset, based on Centennial's review of the filed comments, no one contends that the Commission lacks the authority to require automatic roaming. As Centennial and others explained, the Commission may require a carrier – including a CMRS carrier – to provide service upon "reasonable request," *see* 47 U.S.C. § 201(a), and a request for roaming service surely counts. The only question is whether it makes any sense to fail to do so, and to continue with a system in which millions of consumers each month request service – by pushing "SEND" on their cellphones – but are effectively denied it. Plainly, this does not make any sense at all.

b. Arguments Based On "The Market" Ignore The Competitive Distortions Created By The Licensing And Use Restrictions Imposed Under Title III.

The large carriers' main argument against automatic roaming – to the extent they even acknowledge that a consumer problem exists – is that "the market" is working, so that regulation is not needed.[13] This argument, however, completely misses the point.

The question of whether to require automatic roaming does not turn on whether consumers have choices when they sign up for wireless carriers. They do. The question is whether the Commission should take minimal, reasonable steps to assure that a consumer that

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[12] *See* notes 5 & 6, *supra,* for calculation of these figures.

[13] *See* Verizon Wireless Comments at 7-17; Cingular Wireless Comments at 20-21 T-Mobile Comments, *passim;* Sprint-Nextel Comments, *passim.*

has signed up with a carrier without national spectrum rights can nonetheless obtain service when traveling outside that carrier's service area. As discussed below, it should.

It bears emphasis that this marketplace problem is not the same as the one the Commission was addressing years ago when it established the manual roaming obligation. At that time the main concern was that newly licensed carriers would be placed at an insurmountable disadvantage against existing carriers if the existing carriers could deny in-market roaming. Why would a customer rationally sign up with a second or third carrier in a market if the new carrier did ***not*** offer market-wide coverage, when an existing carrier ***did*** offer such coverage?[14] Failure to require in-market roaming in these circumstances would have defeated the Commission's policies of creating multiple viable competitors in as many areas as possible. By the same token, once all carriers have had adequate time to build out their own networks, this rationale no longer applies.[15]

Note, however, that the need for the original roaming rule did not arise in a purely competitive market. To the contrary, it arose as a result of regulatory ***interference*** with competitive markets. If not for Title III's spectrum licensing requirements and use restrictions – a pure "command and control" regulatory system if ever there was one – anyone who wanted to provide wireless services would have been able to simply build towers, sell handsets, and start broadcasting. Title III, however, prevented the creation of such a pure competitive market. Each

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[14] *See Roaming Notice* at ¶ 5 (describing original rationale for roaming obligation). *See also* Cingular Wireless Comments at 4. One way to view the problem that historical wireless regulation created is that it gave the initial spectrum licensees a built-in "first mover" advantage. At some point so many people sign up for the first movers' networks that potential customers see little point in signing up with latecomers.

[15] In this regard, Nextel Partners makes the classic argument, based on prior market and regulatory conditions, that an automatic roaming requirement would deter carriers from building out their own networks. With automatic roaming, Nextel Partners argues, carriers would "use roaming agreements as a substitute for network buildout." Nextel Partners Comments at ii, 8-9. But this argument has nothing to do with the situation today facing small and regional carriers like Centennial. Centennial's customers from rural and small-city Indiana, Michigan, Louisiana and Mississippi travel to Chicago and Miami and Atlanta and Detroit. Centennial's "incentives" with respect to those markets are irrelevant; it is illegal for Centennial to serve them, and so Centennial cannot lawfully "build out" to do so. Without roaming arrangements, Centennial's customers will not be able to enjoy wireless services in those or other major cities. Nextel's argument may have something to do with the incentives of national carriers to build out their own networks rather than roam on another national carrier's network; it has nothing to do with the situation facing small and regional carriers today.

competitor must obtain a license before using spectrum, and as a matter of simple historical fact, the Commission licensed some providers nearly a decade before others.[16] This regulatory environment distorted the market – it gave earlier licensees a head start and against newcomers. The original roaming rule, in other words, was a regulatory "fix" to a problem created by regulation itself.

Today, multiple carriers serve most of the country (by population, not necessarily land area), and in general those carriers have had plenty of time to build out their systems.[17] So, the need to require existing carriers to provide roaming to latecomers is no longer particularly intense. This does not mean, however, that all regulatory distortions leading to divergence from pure competitive conditions have disappeared. To the contrary, it simply means that as the market has developed, the nature and impact of regulation-induced distortions today are not the same as they were ten or fifteen years ago.

The underlying problem today is not two carriers competing in the same market, where one has been given a regulatory head start. The underlying problem today is that the Commission has licensed some carriers to operate on a national basis while others only have regional or local spectrum rights. Centennial is perfectly aware, for example, that many of its customers from Fort Wayne, Indiana, travel to Chicago. In a fully, truly unregulated competitive market, Centennial would be free today – and would have been free from the beginning – to build an extension of its own system into Chicago (and other strategic locations) to serve its customers. But under the regulatory regime governing wireless services, it is affirmatively illegal for Centennial to respond to these clear marketplace incentives. Its spectrum rights are strictly geographically delimited, by operation of federal law. Assertions that Centennial should be content with what the "market" might deliver by way of roaming options ring hollow when regulation – not the market – forces Centennial to look to other regulatorily-sanctioned firms to

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[16] Traditional cellular service was initiated in the mid-1980s, with two carriers per market. Additional spectrum for PCS services – competitors to cellular – was not licensed until the 1990s. This gave the traditional cellular carriers a multi-year head start.

[17] There are exceptions, of course. For example, Centennial recently acquired some spectrum in rural Michigan adjacent to pre-existing Centennial systems in that area. Centennial is rapidly deploying facilities in its newly acquired area, but is not yet complete.

provide service to Centennial's customers outside of Centennial's regulatorily-established territory.

The large carriers' arguments about retail competition, in short, ignore the fact that some competitors' competitive options are constrained by direct regulatory fiat – that is, the Title III licensing and spectrum use restrictions. Centennial observes that these parties do not mention, much less rely upon, the Commission's successful – and procompetitive – market-opening policies in other areas. In fact, pure or nearly pure "open entry" policies have served the communications industry well in areas such as terminal equipment (any equipment that meets the requirements of 47 C.F.R. Part 68 can be connected to the network) and long distance (under 47 C.F.R. § 63.01, "any person" is authorized to provide interstate services). In evaluating the large carriers' arguments in this matter, Centennial submits that the Commission must recognize that a true competitive market – that is, pure "open entry" alternative for wireless services – is not really on the table.[18] As a result, just as it did when establishing the original manual roaming rule, the Commission should recognize that the limits imposed by its spectrum policies work subtle distortions in the marketplace – in this case, the creation of asymmetric incentives and bargaining power, as between regional and national carriers, with respect to roaming. In these circumstances, the only responsible course is for the Commission to take reasonable steps to minimize the ill effects on consumers of these regulatorily-induced market distortions.[19]

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[18] Both (a) having to ask for governmental permission to offer wireless services in an area, and (b) having to pay the government for use of the spectrum, are regulatory distortions of a truly "free" market for wireless services. The point of this observation is not to engage in a debate about whether Title III's licensing requirements and the Commission's spectrum usage policies are good or bad in the abstract; it is simply to make clear that there are certain ways in which the supply side of the wireless services market is not purely or freely competitive. This means that arguments against an automatic roaming requirement based on "free market," "competitive" considerations must be evaluated with care – and, specifically, with attention paid to the inevitable distortions created by the underlying command-and-control regulatory regime applicable to spectrum usage.

[19] In a variation on the "Problem? What problem?" approach of the large national carriers, Nextel Partners argues that the lack of automatic roaming is not a problem because consumers can obtain "pre-paid wireless service plans" while off-network. Nextel Partners Comments at iii, 10. This argument is completely divorced from the reality of consumer expectations. Imagine a plane landing in Los Angeles. The flight attendant announces that cell phone use is permitted while taxiing to the gate. Subscribers to national networks turn on their phones and start calling. According to Nextel Partners, it is perfectly reasonable to require subscribers to regional systems to wait in frustration until deplaning, and then search around LAX for a store or kiosk selling pre-paid wireless phones and services. Centennial submits that

In this regard, none of the opponents of automatic roaming ever actually suggest that automatic roaming arrangements themselves are in any way bad or inappropriate; obviously, such arrangements are useful to consumers. Their only arguments are that a Commission-imposed automatic roaming ***requirement*** is unnecessary (because "the market" is working) and/or that such a requirement would create bad incentives (by supposedly suppressing the motivation of licensees to complete their build-outs). Centennial submits that the discussion above shows that "the market" will not solve this problem. It also shows that the supposed bad incentives arise only in now-superseded market conditions, in which licensees had not yet built out their systems. As a result, the Commission should impose a minimally intrusive automatic roaming requirement, as described in Centennial's original comments.[20]

c. Technical Differences Between Wireless Systems Make The Wholesale Market Notably Less Competitive Than The Retail Market.

The fact that some carriers have regional spectrum rights, while others have national rights, necessarily distorts the market. One can imagine a world in which this distortion would not translate into consumer harm. For example, if there were 4 or 5 national carrier networks in place for each of the major technologies (*e.g.*, CDMA, GSM), then a regional carrier looking for roaming arrangements would normally face competitive supply at the wholesale level and could, presumably, obtain reasonable roaming arrangements from one or more suppliers. In such a hypothetical world, the underlying distortion caused by command-and-control regulation of supply would not manifest itself in disputes over roaming.

In fact, of course, this is not the situation in the real world. In this regard, Centennial concurs with Leap Wireless's observation that the existence of robust retail competition for end users does not mean that there is robust competition at the wholesale level. Leap Wireless

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(a) such stores and kiosks do not actually exist in most airports, train stations, etc., and (b) even if they did, this is a grossly insufficient solution from the consumer's perspective. The problem is even worse for people who drive rather than use airlines or Amtrak. It is at least conceivable that some entrepreneur might find it profitable to establish prepaid wireless service outlets at airports and train stations. But what is the consumer driving from (say) Fort Wayne, Indiana to New York to do? Check his cellphone periodically and stop in every town to obtain a different pre-paid phone?

[20] *See* Centennial Comments at 6-13. Although not identical to Centennial's, the proposal made by Leap Wireless is generally compatible with Centennial's suggestion. *See* Leap Wireless Comments at 16-21.

Comments at Attachment A (ESR Group's economic analysis of upstream-market duopolists' incentives to exclude downstream competitors). To the contrary, in the marketplace as it exists today, a small or regional carrier seeking roaming services typically faces a duopoly, and in some cases a monopoly, in the supply of such services. The reason is that only national carriers with the same technology as the regional carrier can actually supply roaming services. So when a regional carrier looks for roaming arrangements in Chicago or Dallas, the only candidates for supplying those services are the one or two carriers with the same network technology as the carrier seeking roaming. Leap's analysis makes clear that in such situations, the duopolistic suppliers have strong incentives to act in an anticompetitive manner.

To further demonstrate this point, attached to these reply comments is an analysis by Professor David S. Sibley of the University of Texas – Austin. Professor Sibley's analysis shows that the wholesale market for roaming services is distinct, in economic terms, from the retail market for wireless services sold to consumers. He also shows that the wholesale market is performing in an anticompetitive manner. This confirms, from a different analytical perspective, what is obvious from the Verisign data discussed above: there is something wrong with the functioning of the markets in which automatic roaming arrangements are established. Otherwise, the 300 calls per minute that are today failing to go through – and, thereby, failing to generate real revenue for the roamed-on carriers – would all be completed.[21]

Note that, historically, the larger carriers were at the losing end of this situation. *See, e.g.*, Cingular Wireless Comments at 19. When larger carriers needed to fill in their network coverage in rural areas by means of roaming arrangements (*e.g.*, to provide service along

[21] In economic terms, as an initial matter it appears to make no sense for carriers to leave the revenue from these uncompleted calls on the table, when capturing the revenue would be so simple. It follows that there must be some other benefit that the carrier obtains by refusing to enter into reasonable roaming arrangements that outweighs the benefits from the revenue. A supplier with market power will naturally seek to raise price and restrict output in order to maximize its own profits. That behavior will necessarily mean that some transactions that would occur in a competitive market do not occur. The analysis by Professor Sibley, and the earlier analysis by the ESR Group noted above, show that the need for technical compatibility between a regional system seeking roaming and the roamed-on national systems creates a duopolistic or monopolistic market structure at the wholesale level in which such market power exists. In pragmatic terms, that wholesale market structure gives the national carriers the ability to drive so hard a bargain that some would-be roaming partners walk away from the table. The point of establishing an automatic roaming requirement is to mitigate the impact of the national carriers' power in this technology-constrained wholesale setting.

interstate highways between major cities), the larger carriers had little option but to deal with an existing provider in those areas with technically compatible coverage. Today the problem is reversed – regional carriers need to arrange for their customers to roam in larger metropolitan areas, and when they try to do so, they face a monopoly or duopoly of supply.

It is understandable that large carriers would view this reversal as an example of "the market" and private investment "solving" the problem – now that they have built out more of their networks, they are less dependent on pre-existing licensees, even in many rural areas. Centennial – which has invested heavily in its own networks – certainly respects the time, effort, and money that the national carriers have devoted to improving their operations. But the fact remains that these marketplace developments have not ***eliminated*** preexisting, regulatorily-induced market distortions; instead, as discussed above, marketplace developments shifted the ***locus*** of those distortions off of large carriers seeking nationwide coverage prior to completing their build-outs, and on to small carriers whose complete regulatorily-authorized build-outs do not contain anywhere near 100% of the places that their customers want to travel.

4. Experience Overseas Supports A Reasonable Automatic Roaming Requirement.

Experience in the United Kingdom supports Centennial's proposals in this matter. As described below, just as Centennial is suggesting here, British regulators imposed a simple obligation to enter into automatic roaming arrangements, but left the details to the marketplace. This system worked with no discernable problems.

In October 1999, the then national telecommunications regulator for the United Kingdom, the Office of Telecommunications ("Oftel"), announced that, as a license condition for the use of 3G spectrum, licensees would be required to negotiate commercial roaming agreements on reasonable terms and conditions. Just as Centennial is suggesting for the Commission here, Oftel established itself as the forum for resolving disputes if negotiations broke down.

Two years later, national roaming agreements among the 3G licensees were announced. There had been no need for any resort to Oftel's residual dispute-resolution powers. The system

of allowing private parties to work out the details of meeting a general automatic roaming obligation had worked, once it was clear to all that automatic roaming was mandatory, not optional.[22]

In fact, the system worked so well that the carriers now seek to keep it in place even though it might be removed. In 2003, the European Union acted to supersede national authority in telecommunications regulation, replacing it with a regulatory regime which is more stringent in some ways, and less so in others, than the UK's prior regime. This posed the question of what, as a regulatory matter, might be permitted, and what forbidden, for roaming in Britain?[23]

After consultation, Oftel (which was in the process of being replaced by the Office of Communications ("Ofcom"), a different regulatory body) announced that it was considering abolition of the roaming license conditions – particularly in light of the considerable backup regulatory powers it obtained under the new regime. In fact, however, the industry responded not only by renegotiating roaming agreements, but also by suggesting to Ofcom that it postpone any decisions about the details of the new regulatory regime. Instead, the affected entities suggested that Ofcom should leave the older license condition – requiring roaming arrangements but leaving the details to negotiations – in place. Ofcom has, in fact, taken that advice and postponed any decision to modify the license conditions.[24]

Centennial submits that this experience shows that its proposal is both reasonable and workable. Putting the matter bluntly, large national carriers do not want there to be a clear ***requirement*** that they enter into reasonable automatic roaming agreements because the absence of such a clear requirement gives them an advantage in negotiations with smaller regional carriers who need such arrangements. But, as discussed above, that advantage, at bottom, does not arise from "the market." Instead, it derives from the Title III licensing scheme that makes it

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[22] Oftel, "Access to second generation mobile networks for new entrant third generation mobile operators" (May 1999), available online at: http://www.ofcom.org.uk/static/archive/oftel/publications/1999/consumer/2g3g0599.htm.

[23] Oftel, "Imposing access obligations under the new EU Directives" (2002), available online at: www.ofcom.org.uk/static/archive/oftel/publications/ind_guidelines/acce0902.htm.

[24] *See* Ofcom, "National Roaming - an update" (March 2005) available online at http://www.ofcom.org.uk/consult/condocs/roaming/nr_update?a=87101.

illegal for regional carriers to provide service outside their limited licensed areas. The negotiating advantages of the large carriers, in short, are an artifact of regulation, not of market forces. The fact that there are typically only one or two suppliers of a particular wireless technology in any given area – creating a wholesale-level duopoly – only makes matters worse. In these circumstances, there is no legitimate reason to fail to require negotiated automatic roaming arrangements.

5. Conclusion.

The record shows that support for an automatic roaming requirement depends on whether the affected carrier has national spectrum rights or not. This illustrates that the need for automatic roaming arises, at bottom, not from considerations of marketplace competition but rather as an artifact of the Title III regulatory regime which authorizes some licensees to serve essentially the entire country, while simultaneously forbidding other licensees from doing so. This underlying aspect of "command and control" regulation in wireless markets distorts the incentives and options of the nationwide carriers, and creates a situation in which regulatorily-induced distortions – not sensible market considerations – stand in the way of automatic roaming. The losers in this regime are the 300 consumers per minute who try and fail to make use of their wireless phones outside their home areas.

There is simply no reason to allow this problem to continue, because there is no legitimate reason for any carrier – regional or national – to refuse to enter into a reasonable automatic roaming arrangement. As a result, for the reasons discussed here and in its opening comments, Centennial requests that the Commission establish an automatic roaming requirement, with some general guidance as to acceptable terms, but permit the industry to work out the details in intercarrier negotiations, subject to the availability of the Commission to resolve disputes.

Respectfully submitted,

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Dated: January 26, 2006

The Existence of Regional, Technology-Specific Wholesale Antitrust Markets for Roaming Services

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January 26, 2006

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Appendix: CV of David S. Sibley

I. QUALIFICATIONS, INTRODUCTION, AND SUMMARY OF CONCLUSIONS

A. Qualifications

My name is David S. Sibley. I am the John Michael Stuart Centennial Professor of Economics at the University of Texas at Austin. I hold a Ph.D. in economics from Yale University and a B.A. in economics from Stanford University.

In addition to my current teaching responsibilities at the University of Texas at Austin, in October 2004, I completed an eighteen-month term as Deputy Assistant Attorney General for Economic Analysis in the Antitrust Division of the U.S. Department of Justice ("DOJ"), the highest-ranking economics position within the Division. In this capacity, I supervised all economic analysis within the Antitrust Division (including both merger and non-merger investigations) and directed its Economic Analysis Group. As Deputy Assistant Attorney General, I also contributed to the economic analysis of general policy issues and represented the United States in Organization for Economic Cooperation and Development ("OECD") discussions on vertical foreclosure.

I have also taught graduate-level courses in economics at the University of Pennsylvania and Princeton University. For the last thirty years, I have carried out extensive research in the areas of industrial organization, microeconomic theory, and regulation. My publications have appeared in a number of leading economic journals, including the *Journal of Economic Theory, Review of Economic Studies, Rand Journal of Economics, American Economic Review, Econometrica,* and the *International Economic Review,* among others. I am a co-author (with Steven J. Brown) of a leading textbook on monopoly pricing, THE THEORY OF PUBLIC UTILITY PRICING, published by Cambridge University Press. Prior to joining the University of Texas, I was head of the Economics

Research Group at Bell Communications Research and I served as a member of the Technical Staff in economics at Bell Laboratories.

I have consulted extensively for various firms and agencies, both in the United States and abroad, on antitrust and regulatory matters. I served as a consultant to the Antitrust Division of the DOJ in the *Microsoft* antitrust case and was involved in both the trial and remedy phases of that litigation. I also served as a consultant to the U.S. Federal Trade Commission ("FTC") on several matters involving the competitive effects of horizontal and vertical mergers. Additional details regarding my qualifications and experience are given in my *curriculum vitae*, a recent copy of which is attached as Appendix 1.

B. Introduction

In August 2005, the Federal Communications Commission ("FCC" or "the Commission") issued a Memorandum Opinion and Order and Notice of Proposed Rulemaking ("MOO/NPRM") examining the roaming obligations of Commercial Mobile Radio Service ("CMRS") providers, including the need for an automatic roaming requirement ("ARR").[1]

In their comments in response to the MOO/NPRM, the national CMRS carriers, i.e., Cingular Wireless ("Cingular"), Sprint Nextel Corporation ("Sprint Nextel"), T-Mobile USA ("T-Mobile"), and Verizon Wireless ("Verizon"), claim that an ARR is unnecessary due to the competitiveness of retail CMRS markets.[2] However, the national

[1] See, Memorandum Opinion and Order and Notice of Proposed Rulemaking, *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, FCC 05-160 (released August 31, 2005).

[2] See, Comments of Cingular Wireless LLC, *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, pp. 18-22, Gregory L. Rosston, *An Economic Analysis of How Competition Has Reduced High Roaming Charges*, filed on behalf

CMRS carriers' claim confuses competition in regional wholesale markets for roaming services with competition in retail CMRS markets. This confusion regarding wholesale and retail markets appears to be a consequence of the lack of any market definition analysis performed by the national CMRS carriers or their experts, who appear to regard the retail CMRS market and the wholesale market for roaming as essentially identical.

Leap Wireless International, Inc. ("Leap") and Centennial Communications Corp. ("Centennial") have asked me to examine whether there exist relevant technology-specific regional wholesale antitrust markets for voice and data roaming services. Below, I examine this issue by applying the framework for market definition described in the U.S. Federal Trade Commission's ("FTC") and the U.S. Department of Justice's ("DOJ") Horizontal Merger Guidelines ("Merger Guidelines"). I first provide some background information regarding wholesale roaming in Section II below. Next, in Section III, I describe the framework for market definition in the Merger Guidelines, which is the most commonly used framework for antitrust market definition. In Section IV, I apply the Merger Guideline's market definition framework to wholesale roaming services. Finally, in Section V, I critique the market definition analysis performed by Dr. Gregory L. Rosston in his comments on behalf of Sprint Nextel.

C. Summary of Conclusions

Based on my analysis, I reach the following conclusions:

1. The national CMRS carriers and Dr. Rosston claim that the competitiveness of retail CMRS markets implies that wholesale-level concerns regarding roaming

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of Sprint Nextel, *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, pp. 11-14, Comments of Verizon Wireless, *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, pp. 7-12, and Comments of T-Mobile USA, Inc., *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, pp. 13-16.

are unfounded. However, this claim appears to be a result of the lack of any correct market definition analysis performed by the national CMRS carriers and Dr. Rosston.

2. A proper application of the Merger Guidelines framework for market definition in the presence of price discrimination implies that there exist relevant technology-specific regional wholesale antitrust markets for voice roaming services sold to regional carriers as a group. In particular, I demonstrate that there exist regional wholesale antitrust markets for voice roaming services sold to regional carriers for both CDMA and iDEN technologies. I have not been able to obtain the data required to apply the Merger Guidelines "hypothetical monopolist" test to regional wholesale markets for voice roaming services sold to regional carriers for GSM technology. However, I have seen no evidence to indicate that my conclusions with respect to GSM technology would differ from my conclusions with respect to the iDEN and CDMA technologies.

3. In addition, although I also do not have the data to apply the Merger Guidelines "hypothetical monopolist" test to technology-specific regional wholesale markets for data roaming services sold to regional carriers, I have seen no evidence to indicate that my conclusions with respect to data roaming services would differ from my conclusions with respect to the iDEN and CDMA technologies for voice roaming services. That is, I have seen no evidence to indicate that there do not exist technology-specific regional wholesale antitrust markets for data roaming services sold to regional carriers.

II. WHOLESALE ROAMING BACKGROUND

A. Wholesale Roaming and Manual vs. Automatic Roaming

Retail CMRS customers purchase service from a carrier in their home area. When a customer either travels outside her home area or utilizes the network of another carrier while making a phone call (or using data services), then the customer is said to be roaming. Roaming may be classified into two categories: on-network and off-network. On-network roaming occurs when a customer makes a call from outside her home area, while still on the network of her carrier. Off-network roaming occurs when a customer makes a call utilizing the network of another carrier.

There are two ways of implementing off-network roaming: manual roaming and automatic roaming. Under manual roaming, a customer must register with the network she wishes to use for off-network roaming prior to using that network. The customer must place a call with the assistance of an operator, and provide a credit card number for payment. Note that manual roaming is an action that is initiated by the customer and is likely invisible to the customer's carrier. In contrast, under automatic roaming, a carrier arranges for its customers to use another carrier's network.

Since, under automatic roaming, a carrier acquires the right to roam on another carrier's network on behalf of its customers, automatic roaming is a wholesale product. That is, automatic roaming is an input that is acquired by a carrier in order to provide its customers with a retail service, i.e., off-network roaming.

B. Evidence of Price Discrimination for Wholesale Roaming Services

There is considerable evidence of price discrimination at the wholesale level for roaming services. The following list illustrates the discriminatory wholesale roaming rates (including refusals to deal) offered to regional carriers by the national CMRS carriers.

1. RTG and OPASTCO, two small carrier associations, filed comments indicating that their members pay roaming rates to national carriers that range from $0.35 to $0.99 per minute with an average highest rate of $0.52 per minute. RTG and OPASTCO also indicated that Verizon does not allow the customers of rural carriers to roam in their home state, i.e., just outside the "island" in which a rural carrier operates. [3]
2. NTCH, Inc., a regional carrier, filed comments indicating that it had to exit a region because it was unable to obtain service on reasonable terms – one CDMA national carrier offered NTCH roaming at $0.50 per minute with an additional $0.15 per minute for long distance while the other CDMA national carrier from whom NTCH could have obtained roaming refused to even negotiate terms until after the MOO/NPRM was initiated.[4]
3. Leap filed comments indicating that the average rate it pays large carriers for roaming is $0.28 per minute with the highest rates exceeding $0.40 per minute.[5] Furthermore, my understanding is that at least one large carrier that offers Leap

[3] See, Comments of the Rural Telecommunications Group, Inc. and The Organization for the Promotion and Advancement of Small Telecommunications Companies, *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, pp. 10-12.
[4] See, Comments of NTCH, Inc., *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, pp. 3-4.
[5] See, Comments of Leap International, Inc., Declaration of Robert J. Irving, Jr., *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, p. 2.

roaming may arbitrarily define Leap's home area, and denies Leap "home roaming" even in areas where Leap does not own spectrum or operate a network.[6]

4. SouthernLINC Wireless ("SouthernLINC"), a regional carrier, has been unable to obtain a roaming agreement from Nextel Partners, a partially owned affiliate of Sprint Nextel, and SouthernLINC's only wholesale supplier of iDEN roaming services in some regions.[7]

5. Airtel Wireless ("Airtel") operates an iDEN network in the state of Montana. The only "roaming" arrangement that Airtel Wireless has been able to reach with Sprint Nextel, which does not offer iDEN service in Montana, requires Airtel's customers to purchase prepaid Sprint Nextel SIM cards and replace their Airtel SIM cards with the Sprint Nextel SIM cards when they travel outside Montana. As noted by Airtel, it is not clear whether the arrangement with Sprint Nextel even qualifies as a roaming arrangement since Airtel's customers cannot use their own phone numbers when using the Sprint Nextel SIM cards; instead they are provided with a Sprint Nextel phone number when traveling outside Montana.[8]

6. Airpeak Communications ("Airpeak") operates an iDEN network in the states of Nevada, New Mexico, and Washington. Sprint Nextel failed to even respond to Airpeak's request for negotiations regarding a roaming agreement.[9]

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[6] See, Comments of Leap International, Inc. ("Leap Comments"), *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, p. 15.

[7] See, Comments of SouthernLINC Wireless, *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, p. 3.

[8] See, Joint Comments of Airpeak Communications, LLC and Airtel Wireless, LLC, *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, p. 7.

[9] See, Joint Comments of Airpeak Communications, LLC and Airtel Wireless, LLC, *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, p. 7.

In contrast to the experience of regional carriers in attempting to negotiate roaming agreements with the national CMRS carriers, according to ERS Group's comments on behalf of Leap, affiliates of the national CMRS carriers pay wholesale roaming rates between $0.04 to $0.08 per minute, while Mobile Virtual Network Operators ("MVNOs") pay wholesale roaming rates between $0.05 to $0.10 cents per minute.[10] This is direct evidence of price discrimination at the wholesale level.

In addition, according to Professor R. Preston McAfee's comments on behalf of SouthernLINC, the national CMRS carriers offer their retail customers single-rate calling plans (i.e., plans with no additional charges for roaming, whether on or off a carrier's network) that yield the national CMRS carriers average gross revenues of between $0.026 and $0.05 per minute (for the lowest per minute rate plans).[11] That is, regional carriers are apparently charged wholesale roaming rates far in excess of the lowest retail rates offered by the national CMRS carriers to their retail customers. Next, I discuss the approach to antitrust market definition outlined in the Merger Guidelines.

III. THE MERGER GUIDELINES FRAMEWORK FOR MARKET DEFINITION

The approach most often used for antitrust product market definition is the so-called "hypothetical monopolist" test described in the Merger Guidelines. According to the Merger Guidelines:

> Absent price discrimination, the Agency will delineate the product market to be a product or group of products such that a hypothetical profit-

[10] See, Comments of ERS Group, on behalf of Leap International, Inc., *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, p. 11.

[11] See, R. Preston McAfee, *The Economics of Wholesale Roaming in CMRS Markets* ("McAfee Comments"), filed on behalf of SouthernLINC Wireless, *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, Table 1, p.9.

> maximizing firm that was the only present or future seller of these products ("monopolist") likely would impose at least a "small but significant and nontransitory increase in price.[12]

As demonstrated in the previous section, wholesale roaming markets display at least one feature that is at odds with the above approach, namely, that price discrimination appears to exist. The Merger Guidelines allow for this possibility, however, by expanding the above approach to allow for what are sometimes called "price discrimination markets." That is, it may be the case that some groups of customers differ from others in their ability to evade the effects of a "small but significant and nontransitory increase in price" ("SSNIP"). For this reason, a hypothetical monopolist may charge those customers a different price than customers that are more readily able to escape a SSNIP. If a SSNIP imposed on a group of customers would indeed be profitable, then that group of customers should be treated as a separate antitrust market. Thus, according to the Merger Guidelines:

> If a hypothetical monopolist can identify and price differently to those buyers ('targeted buyers') who would not defeat the targeted price increase by substituting to other products in response to a 'small but significant and nontransitory' price increase for the relevant product, and if other buyers likely would not purchase the relevant product and resell to targeted buyers, then a hypothetical monopolist would profitably impose a discriminatory price increase on sales to targeted buyers. *This is true regardless of whether a general increase in price would cause such significant substitution that the price increase would not be profitable.*"[13] (Emphasis added.)

Naturally, for a price discrimination market to exist, it must be impossible for the customers being charged a low price to resell to the customers being charged a high price. This requirement is easily met in the case of CMRS, since current contractual practices

[12] Merger Guidelines, Section 1.11.
[13] Merger Guidelines, Section 1.12.

prevent the resale of roaming minutes, whether at the wholesale or retail levels. I now turn to an application of the Merger Guidelines approach to market definition to wholesale roaming services.

IV. APPLICATION OF THE MERGER GUIDELINES FRAMEWORK TO WHOLESALE ROAMING

In this section, I apply the framework outlined in the Merger Guidelines to wholesale roaming services. In this context, I note that markets for roaming services are, by their very nature, regional. That is, roaming services in one region (whether city, county, state, or country) are not economic substitutes for roaming services in another region. Thus, a consumer of roaming services (i.e., a regional CMRS carrier) in San Francisco, CA cannot avoid a SSNIP by substituting to roaming services in Austin, TX. For this reason, I will take the regional nature of wholesale markets for roaming services as given.

First, I note that in the context of CMRS roaming, it is important to specify the technology used by the hypothetical monopolist. This is because a seller that uses a particular digital technology can only provide roaming for a buyer that uses the same technology. For example, SouthernLINC, which uses the iDEN format, can buy roaming only from Sprint Nextel (and its partially owned affiliate, Nextel Partners) because only that national CMRS carrier can provide roaming for carriers operating iDEN networks. Similarly, Leap operates a CDMA network, and so is limited to a roaming wholesaler that also uses that technology. My understanding is that the use of dual-mode handsets, which would permit substitution across different wireless technologies, is not currently a

viable option for regional carriers. The reason why is that, even when available, dual-mode handsets are more expensive than single-mode handsets with comparable features and, in addition, there are relatively few dual-mode handset designs available.[14] Apparently, business travelers who wish to roam internationally are the primary users of dual-mode handsets. Significantly, I have been informed that, due to the aforementioned limitations of currently available dual-mode handsets, Leap has not found it profitable to sell dual-mode handsets to its customers in order to substitute away from CDMA wholesale roaming. Thus, if wholesale roaming is a relevant antitrust market, it is a technology-specific market.

Next, since regional carriers appear to be charged different roaming rates by suppliers of wholesale roaming than the rates offered to the suppliers' affiliates and MVNOs, and since current contractual practices prevent any resale of roaming services, the correct approach in applying the hypothetical monopolist test is to treat regional operators as a group as a price discrimination market.[15]

The final step in applying the SSNIP test to a price discrimination market is to specify the initial price to which the increment (i.e., the SSNIP) must be added. In the case where the current price is the profit-maximizing price (i.e., the monopoly price for the hypothetical monopolist), a SSNIP on top of that price would never be profitable, so the SSNIP should be added to an estimate of the competitive price.[16] If the estimated competitive price plus the SSNIP is less than the current price, then the product in

[14] Based on discussions with Leap, I understand that there are no dual-mode iDEN/CDMA handsets currently available.
[15] This assumes wholesale suppliers of roaming services charge regional carriers similar rates in a particular region. As discussed below, if there is price discrimination across regional carriers in a particular region, then the relevant price discrimination markets may be narrower, even regional carrier-specific.
[16] See, Merger Guidelines, Section 1.11.

question is a relevant antitrust market. The logic here is that if (1) the competitive price plus the SSNIP is less than the current price and (2) the current price is the profit-maximizing monopoly price, then the SSNIP must be profitable. In this case, the hypothetical monopolist would want to raise the price even further (i.e., beyond the competitive price plus the SSNIP).

This logic applies directly to the case of regional carriers, like SouthernLINC, that operate iDEN networks since Sprint Nextel (and its partially owned affiliate, Nextel Partners) is the only national seller of wholesale iDEN roaming services.[17] Professor McAfee, in his comments on behalf of SouthernLINC, reports the average gross revenue per minute for the single-rate plans with the lowest per minute rate offered by the four national CMRS carriers, Verizon, Cingular, Sprint Nextel and T-Mobile. Single-rate plans are a useful benchmark because such plans do not levy any additional charges on consumers for roaming – whether on or off a carrier's network. The average gross revenue for the single-rate plan with the lowest per minute rate offered by Sprint Nextel is 5 cents per minute.[18] It is reasonable to suppose that Sprint Nextel's marginal cost is no higher than this, so that we may take 5 cents per minute as a conservative estimate of the competitive retail per minute rate. In addition, among the single-rate plans offered by Sprint Nextel, the highest average gross revenue per minute offered to consumers is 15 cents per minute.[19] This latter rate seems even more likely to be an upper bound estimate of the competitive price at the retail level. In order to get an estimate of a competitive wholesale roaming price, one needs to deduct from the retail price the estimated costs of

[17] See, McAfee Comments, p. 11.
[18] See, McAfee Comments, Table 1, p. 9.
[19] Based on information available at the Sprint Nextel website (website last visited on January 6, 2006). Sprint Nextel's single-rate plan with the highest per minute rate, the "Fair and Flexible" plan with 200 included minutes, costs $29.99 or $0.15 per minute and includes unlimited night and weekend minutes

customer acquisition, billing and customer care since these costs are avoided when serving wholesale customers. Professor McAfee has estimated these costs to be about 2 cents per minute,[20] so that minimum and maximum estimates of a competitive *wholesale* roaming price are 3 cents per minute and 13 cents per minute, respectively. I note that these estimates are likely to be conservative for two reasons. First, the Sprint Nextel plan rates quoted above include unlimited "night and weekend" minutes – implying that the actual per minute rates could be considerably lower for consumers who use a lot of night and weekend minutes. Second, since the rates quoted above are *retail* rates, they should include a profit margin that would push these rates above the competitive wholesale level.

A 5 percent SSNIP on the maximum estimated competitive wholesale price for iDEN wholesale roaming of 13 cents per minute implies a wholesale roaming price of 13.65 cents per minute while a 10 percent SSNIP implies a wholesale roaming price of 14.3 cents per minute.[21] Thus, based on the 10 percent SSNIP test, there is a relevant antitrust market for iDEN wholesale roaming sold to regional carriers as long as regional carriers are charged a wholesale roaming rate that exceeds approximately 15 cents per minute. Similarly, based on my estimated minimum competitive price for iDEN wholesale roaming of 3 cents per minute, there is a relevant antitrust market for iDEN wholesale roaming sold to regional carriers as long as regional carriers are charged a wholesale roaming rate that exceeds approximately 3.5 cents per minute based on a 10 percent SSNIP.

[20] See, McAfee Comments, p. 10.
[21] According to the Merger Guidelines, the FTC and DOJ "will use a price increase of five percent lasting for the foreseeable future," although the SSNIP could be larger or smaller depending on the nature of the industry being examined. See, Merger Guidelines, Section 1.11.

In order to complete the SSNIP test, I need to know the actual wholesale roaming prices paid by regional iDEN carriers. I do not have this information, but there are reports of some national CMRS carriers charging in excess of 30 cents per minute for wholesale roaming. As noted above, Leap is reportedly charged an average of 28 cents per minute for roaming service by large carriers. Since Leap operates a CDMA network, and there are two national CMRS carriers who operate CDMA networks as compared to a single national CMRS carrier for iDEN, it is reasonable to assume that regional iDEN carriers pay more than 15 cents per minute, implying that there exists a relevant antitrust market for iDEN wholesale roaming sold to regional carriers. In addition, as noted above, roaming markets are regional, by definition.

The analysis above assumes that regional iDEN carriers as a group are similarly situated to SouthernLINC with respect to roaming rates. To the extent that other regional iDEN carriers are not similarly situated to SouthernLINC, then the relevant antitrust market will be narrower, possibly regional carrier-specific. For example, if all regional iDEN carriers other than SouthernLINC received competitive wholesale roaming rates, then there would be regional antitrust markets for iDEN wholesale roaming sold to SouthernLINC.

I now examine regional carriers, like Leap, that operate CDMA networks. Since there are two national suppliers of CDMA wholesale roaming services and, depending on the region, additional regional suppliers of CDMA wholesale roaming services,[22] the analysis is potentially more complicated than for the case of regional iDEN carriers. Suppose that a regional carrier like Leap requests roaming from a hypothetical

[22] See, McAfee Comments, p. 6.

monopolist for a particular region. If the hypothetical monopolist imposed a SSNIP on top of the current price, what are a regional carrier's alternatives?

As discussed above, dual-mode handsets are not currently an economic alternative. Thus, the only alternative available to regional CDMA carriers in order to defeat a SSNIP is to build out their network to include the desired geographic area.[23] However, for this alternative to be considered for the purpose of market definition under the Merger Guidelines framework, building a network must not involve significant sunk costs that would not be recouped within one year.[24] Building a network, however, is a costly enterprise, since it involves the purchase of spectrum, the construction of new network facilities, and marketing and promotional costs. The costs of purchasing spectrum, particularly in areas with concentrated populations, are likely to be substantial. For example, Table One below presents the winning bids for 10 Mhz slices of spectrum in the FCC's auction no. 58 (Broadband PCS). The winning bid for the most populous region in auction no. 58, Los Angeles, CA, was over $280 million.

[23] Note that, since regional iDEN carriers already face a monopolist, if such carriers request wholesale roaming services rather than building out their networks in a region, it follows that building out their networks is more expensive than acceding to the current wholesale price in a region, which is well above the competitive wholesale price plus a SSNIP, as discussed above.

[24] See, Merger Guidelines, Section 1.32.

TABLE ONE
NET WINNING BIDS FOR THE TEN MOST POPULOUS REGIONS
IN THE FCC'S AUCTION 58 (BROADBAND PCS)

License Size (Mhz)	Region Name	Population	High Bidder	Net Winning Bid ($)
10	Los Angeles, CA	16,391,590	Royal Street Communications, LLC	280,897,500
10	Houston, TX	5,045,022	Vista PCS, LLC	103,104,000
10	Houston, TX	5,045,022	Cricket Licensee (Reauction), Inc.	94,742,000
10	Minneapolis-St. Paul, MN	3,293,598	Edge Mobile, LLC	16,468,000
10	Minneapolis-St. Paul, MN	3,293,598	Carroll Wireless, LP	15,756,750
10	Minneapolis-St. Paul, MN	3,293,598	Cook Inlet/VS GSM VII PCS, LLC	15,438,750
10	Seattle-Tacoma, WA	3,232,492	Vista PCS, LLC	35,709,000
10	Seattle-Tacoma, WA	3,232,492	Wirefree Partners III, LLC	27,774,750
10	Seattle-Tacoma, WA	3,232,492	Cook Inlet/VS GSM VII PCS, LLC	26,660,250
10	Cleveland-Akron, OH	2,993,610	Cook Inlet/VS GSM VII PCS, LLC	49,135,000
10	Cleveland-Akron, OH	2,993,610	Cellco Partnership d/b/a Verizon Wireless	48,036,000
10	Cleveland-Akron, OH	2,993,610	CSM Wireless, LLC	34,453,500
10	St. Louis, MO	2,873,395	Cellco Partnership d/b/a Verizon Wireless	141,983,000
10	San Diego, CA	2,813,833	Cellco Partnership d/b/a Verizon Wireless	61,405,000
10	San Diego, CA	2,813,833	Cricket Licensee (Reauction), Inc.	55,829,000
10	Denver, CO	2,712,488	Edge Mobile, LLC	15,596,000
10	Denver, CO	2,712,488	Cook Inlet/VS GSM VII PCS, LLC	11,824,500
10	Pittsburgh, PA	2,471,759	Edge Mobile, LLC	14,213,000
10	Pittsburgh, PA	2,471,759	Edge Mobile, LLC	12,359,000
10	Pittsburgh, PA	2,471,759	Vista PCS, LLC	12,359,000
10	Cincinnati, OH	2,170,768	Vista PCS, LLC	21,312,000
10	Cincinnati, OH	2,170,768	Alaska Native Broadband 1 License, LLC	20,242,000
10	Cincinnati, OH	2,170,768	Wirefree Partners III, LLC	18,630,750
10	Portland, OR	2,114,640	CSM Wireless, LLC	19,185,000

Source:
U.S. Federal Communications Commission, available at http://wireless.fcc.gov/auctions/58/charts/58markets.xls (website last visited on January 6, 2005).

The costs of purchasing spectrum are not necessarily sunk since spectrum can be resold. However, the value of spectrum can fluctuate over time, and the magnitude of the costs involved in acquiring spectrum in cities like Los Angeles implies that even a relatively small decrease in the value of spectrum could impose significant unrecoverable

costs (i.e., sunk costs) on a regional carrier that attempted to build out its network in such areas. In addition, although I do not have data on the sunk costs associated with constructing network infrastructure or marketing and promotional costs, these could well be substantial.

Even more important for the market definition exercise, however, is the time dimension. As noted above, for the expanding regional carrier to count as an additional supplier under the Merger Guidelines, there can be no sunk entry costs that cannot be recovered within one year. To build out a CMRS network in an area like Los Angeles is almost certain to take more than one year, even if this were to be done via merger or acquisition.[25] Hence, for the purpose of the SSNIP test, building out a network is not likely to be an option allowed under the Merger Guidelines framework, even if it were economic.

Next, I apply the SSNIP test to regional CDMA carriers. Since there are typically multiple potential suppliers for wholesale CDMA roaming services, performing the SSNIP test for regional CDMA carriers is less straightforward than for regional iDEN carriers. I use data available for Leap and assume that other regional CDMA carriers are similarly situated. My understanding, based on discussions with Leap, is that roughly 20 percent of Leap's roaming minutes are in regions where Leap has a single CDMA roaming partner. In these regions, Leap does not obtain roaming service from one national CDMA carrier due to that carrier's definition of home roaming. Leap's wholesale roaming rate for these regions exceeds 40 cents per minute. Thus, I conclude that the monopoly price for wholesale CDMA roaming is at least equal to 40 cents per

[25] Based on discussions with Leap, I understand that building out a network usually takes between 12 to 18 months.

minute. In addition, I understand that Leap's remaining roaming minutes are in regions that are at least partially competitive markets, with two or more CDMA roaming partners. For these regions, I am informed that the average roaming price paid by Leap is less than 20 cents per minute. Thus, I conclude that the competitive price for wholesale CDMA roaming is less than 20 cents per minute. These facts imply that a 5 or 10 percent SSNIP above the competitive price is clearly profitable, and hence regional wholesale CDMA roaming sold to regional CDMA carriers is a relevant antitrust market.[26]

The foregoing analysis assumes that regional CDMA carriers as a group are similarly situated to Leap with respect to both the number of national CMRS carriers offering wholesale roaming services and the roaming rates available. To the extent that regional CDMA carriers are not similarly situated to Leap, then the relevant antitrust markets will be narrower, possibly regional carrier-specific. For example, if all regional CDMA carriers other than Leap received competitive wholesale roaming rates, then there would be regional antitrust markets for CDMA wholesale roaming sold to Leap.

As noted above, I do not have data on the wholesale roaming rates paid by regional GSM carriers. For this reason, I cannot perform a SSNIP test to determine whether there exist regional antitrust markets for GSM wholesale roaming sold to regional GSM carriers. However, I have seen no evidence to indicate that such markets do not exist. In addition, as in the case of CDMA and iDEN, to the extent that different regional GSM carriers are charged different wholesale roaming rates, the relevant markets for wholesale GSM roaming will be narrower, possibly even regional carrier-specific.

[26] I assume that the competitive and monopoly roaming price is the same across regions. Based on discussions with Leap, I understand that this is a good approximation since the marginal cost of roaming is likely roughly similar across regions.

Finally, the foregoing discussion has focused on voice roaming services. However, similar analyses would also apply to data roaming services. Data roaming services are distinct from voice roaming services because a consumer of data roaming services could not substitute voice roaming services in order to defeat a SSNIP, and vice versa. Unfortunately, as with GSM voice roaming services, I lack the data to perform a SSNIP test to determine whether there exist technology-specific regional wholesale markets for data roaming services sold to regional carriers. However, I have seen no evidence that would indicate that such markets do not exist. And, as with voice roaming services, to the extent that different regional carriers are charged different rates for data roaming services, narrower, possibly regional carrier-specific antitrust markets could exist.

V. A CRITIQUE OF DR. ROSSTON'S MARKET DEFINITION ANALYSIS

Dr. Rosston, in his comments on behalf of Sprint Nextel, has discussed the issue of market definition within the context of this proceeding. He concludes that wholesale roaming by technology type is not an antitrust market.[27] Having reviewed his analysis, I am at a loss to understand his reasoning. Dr. Rosston begins with a reference to the Merger Guidelines, and tries to give the impression that his analysis is based on them. In fact, he confuses *wholesale* market definition with broad statements about the competitiveness of the CMRS *retail* market. Thus, he not only deals with the wrong market, but he confuses statement about the competitive effects of a merger with market definition. As I explain below, these are two very different things.

[27] See, Gregory L. Rosston, *An Economic Analysis of How Competition Has Reduced High Roaming Charges* ("Rosston Comments"), filed on behalf of Sprint Nextel, *Reexamination of Roaming Obligations of Commercial Mobile Radio Service Providers*, WT Docket No. 05-265, November 28, 2005, pp. 11-12.

To begin with, both common sense and the Merger Guidelines make it clear that the hypothetical monopolist test must be done using the price that corresponds to the market under analysis: "[in] general, the price for which an increase will be postulated will be whatever is considered to be the price of the product at the stage of the industry being examined."[28] Dr. Rosston's, however, tries to analyze market definition of wholesale roaming by reference to the retail price paid by CMRS customers:

> Narrow technology-specific relevant markets would be inappropriate because a hypothetical monopolist of a specific technology in another area could not increase prices profitably in the home market by raising roaming charges. As the FCC noted in the recent merger analysis quoted above, higher roaming rates for one specific technology would lead consumers in the home market to choose other technologies.[29]

This discussion makes it clear that Dr. Rosston is relating the effect of a rise in the price of an input (wholesale roaming) to its effects on the price of a retail product (CMRS). This violates the methodology of the Merger Guidelines. This is not simply a formalistic point, with no practical effect; Dr. Rosston's procedure distorts the entire market definition analysis. To see why, note that Dr. Rosston assumes implicitly that a 5 percent or 10 percent SSNIP in the wholesale price of roaming will cause the customer of a hypothetical CDMA monopolist to substitute to a hypothetical GSM or iDEN monopolist. He performed no analysis of whether this is at all likely, given the very much reduced percentage effect that a wholesale SSNIP will have on a customer's retail bill. For example, according to the CTIA (whose survey data are also used by Dr. Rosston), for small operators, roaming revenues are approximately 16.6 percent of total

[28] Merger Guidelines, Section 1.11.
[29] Rosston Comments, p. 13.

revenues.[30] As a first approximation, then, a 5 percent SSNIP in roaming rates implies a 0.8 percent increase in a customer's retail bill, and a 10 percent SSNIP only a 1.7 percent increase in a customer's retail bill. In neither case does the size of the induced effect of the wholesale roaming price on a customer's retail bill come close to the Merger Guidelines standard level of 5 percent, let alone 10 percent. The foregoing analysis demonstrates that Dr. Rosston's attempt to conduct the hypothetical monopolist test is incorrectly carried out, and hence his conclusions regarding market definition are wrong.

More Generally, Dr. Rosston's approach has absurd implications for market definition as is demonstrated by the following thought experiment. Suppose that we were concerned with defining a market for computer circuit boards and that there are two kinds of computer circuit boards, which differ only in color, one being red and the other brown. Suppose also that circuit boards are unseen by computer users, and hence the two kinds of circuit boards are perfect substitutes for computer manufacturers, who are indifferent about the color of a circuit board. Suppose further that each type of circuit board comprises 4 percent of the total price of a computer. Then, doing the market definition analysis correctly at the wholesale level, a SSNIP in the price of a red circuit board would cause computer makers to substitute brown circuit boards for red ones, since they are perfect substitutes. Clearly, both colors are in the same antitrust market. Using Dr. Rosston's approach, however, a 10 percent SSNIP in the price of a red circuit board would only cause the total price of a computer using red circuit boards to rise by 0.4 percent, which is far too low to be a SSNIP. Following Dr. Rosston's logic, since the likely impact of a 10 percent SSNIP on the sale of computers with red circuit boards is

[30] See, CTIA, Small Market Operators in the U.S. Wireless Marketplace: Semi-Annual Data Survey Results, Year-End 2004 Results, June 2005, Table 59, p. 78.

nearly zero, one would conclude, erroneously, that red and brown circuit boards are in separate antitrust markets. In general, because Dr. Rosston's methodology for market definition, which contrary to his assertions is not the framework outlined in the Merger Guidelines, mixes up wholesale demand with the retail price of a product, he would wrongly conclude that many perfect substitutes at the wholesale level were in separate antitrust markets.

APPENDIX

CURRICULUM VITAE OF DAVID S. SIBLEY

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Education:

1969 B. A. in Economics, Stanford University
1973 Ph.D. in Economics, Yale University

Teaching Fields:

Graduate and undergraduate courses in industrial organization, including topics covering antitrust and regulation.

Research Fields:

Vertical restrictions, including bundling and tying; vertical and horizontal mergers; public utility pricing and regulatory policy.

Professional Experience:

May 2003 – October 2004: Deputy Assistant Attorney General for Economic Analysis, U.S. Department of Justice, Washington, D.C.

March 1992 – Present: John Michael Stuart Centennial Professor of Economics, University of Texas at Austin.

August 1991- March 1992: Edward Everett Hale Centennial Professor of Economics, University of Texas at Austin.

September 1983 - August 1991: Research Manager, Bell Communications Research, Morristown, NJ. Head of Economics Research Group.

September 1981- September 1983: Member of Technical Staff, Bell Laboratories, Murray Hill, NJ.

September 1980 - September 1981: Adviser to the Chairman of the Civil Aeronautics Board.

January 1980 - September 1980: Consultant, Civil Aeronautics Board, Washington, D.C.

September 1978 - January 1980: Senior Staff Economist, Council of Economic Advisers, Executive Office of the President, Washington, D.C.

October 1973 - September 1978: Member of Technical Staff, Bell Laboratories, Holmdel, NJ.

Teaching:

September 1991 - Present: Introductory Microeconomics, undergraduate and graduate Industrial Organization.

Fall 1989: Visiting Lecturer, Woodrow Wilson School of Public and International Affairs, Princeton University. Graduate course in regulation and public choice.

September 1983 - December 1983: Adjunct Lecturer in Economics, University of Pennsylvania. Graduate course on regulation.

Publications:

A. Journal Articles:

"A Note on the Concavity of the Mean-Variance Problem," *Review of Economic Studies*, July 1975.

"Permanent and Transitory Income Effects in a Model of Optimal Consumption with Wage Income Uncertainty," *Journal of Economic Theory*, August 1975.

"Optimal Foreign Borrowing with Export Revenue Uncertainty," (with J. L. McCabe), *International Economic Review*, October 1976.

"The Demand for Labor in a Dynamic Model of the Firm," *Journal of Economic Theory*, October 1977.

"Optimal Decisions with Estimation Risk," (with L. C. Rafsky, R. W. Klein and R. D. Willig), *Econometrica*, November 1977.

"Regulatory Commission Behavior: Myopic vs. Forward-Looking," (with E. E. Bailey), *Economic Inquiry*, June 1978.

"Public Utility Pricing Under Risk: The Case of Self-Rationing," (with J. C. Panzar), *American Economic Review*, December 1978. To be reprinted in *The International Library of Critical Writings in Economics*, Mark Blaug (ed.), Edward Elgar Press.

"A Dynamic Model of the Firm with Stochastic Regulatory Review," (with V. S. Bawa), *International Economic Review*, October 1980.

"Optimal Nonlinear Pricing for Multiproduct Monopolies," (with L. J. Mirman), *Bell Journal of Economics*, Autumn 1980. To be reprinted in *The International Library of Critical Writings in Economics*, Mark Blaug (ed.), Edward Elgar Press.

"Efficiency and Competition in the Airline Industry," (with D. R. Graham and D. P. Kaplan), *Bell Journal of Economics*, Spring 1983.

"Optimal Non-Uniform Pricing," (with M. B. Goldman and H. E. Leland), *Review of Economic Studies*, April 1984. To be reprinted in *The International Library of Critical Writings in Economics*, Mark Blaug (ed.), Edward Elgar Press.

"Reply to Lipman and Further Results," *International Economic Review*, June 1985.

"Public Utility Pricing Under Risk: A Generalization," *Economics Letters*, June 1985.

"Optimal Consumption, the Interest Rate and Wage Uncertainty," (with D. Levhari), *Economics Letters*, 1986.

"Regulating Without Cost Information: The Incremental Surplus Subsidy Scheme," (with D. M. Sappington), *International Economic Review*, May 1989.

"Asymmetric Information, Incentives and Price Cap Regulation," *Rand Journal of Economics*, Fall 1989.

"Optimal Two Part Tariffs for Inputs," (with J. C. Panzar), *Journal of Public Economics*, November 1989.

"Regulating Without Cost Information: Some Further Thoughts," (with D. M. Sappington), *International Economic Review*, November 1990.

"Compensation and Transfer Pricing in a Principal-Agent Model," (with D. E. Besanko), *International Economic Review*, February 1991.

"Thoughts on Nonlinear Pricing Under Price Cap Regulation," (with D. M. Sappington), *Rand Journal of Economics*, Spring 1992.

"Ex Ante vs. Post Pricing: Optional Calling Plans vs. Tapered Tariffs," (with K. Clay and P. Srinagesh), *Journal of Regulatory Economics*, 1992.

"Optimal Non-linear Pricing With Regulatory Preference over Customer Types," (with W. W. Sharkery), *Journal of Public Economics*, February 1993.

"Regulatory Incentive Policies and Abuse," (with D. M. Sappington), *Journal of Regulatory Economics*, June 1993.

"A Bertrand Model of Pricing and Entry," (with W. W. Sharkey), *Economics Letters*, 1993.

"Optional Two-Part Tariffs: Toward More Effective Price Discounting," (with R. Rudkin) in *Public Utilities Fortnightly*, July 1, 1997.

"Multiproduct Nonlinear Prices with Multiple Taste Characteristics," (with P. Srinagesh), *Rand Journal of Economics*, Winter 1997.

"The Competitive Incentives of Vertically-Integrated Local Exchange Carriers: An Economic and Policy Analysis," (with D. L. Weisman), *Journal of Policy Analysis and Management*, Winter 1998.

"Having Your Cake – How to Preserve Universal-Service Cross Subsidies While Facilitating Competitive Entry," (with Michael J. Doane and Michael A. Williams), *Yale Journal on Regulation*, Summer 1999.

"Raising Rivals' Costs: The Entry of a Upstream Monopolist into Downstream Markets," (with D. L. Weisman), *Information, Economics and Policy* 10:451-470

"Selected Economic Analysis at the Antitrust Division: The Year in Review," (with K. Heyer), *Review of Industrial Organizations* 23*:* 95-119, 2003

"Pricing Access to a Monopoly Input," (with Michael J. Doane, Michael A. Williams, and S. Tsai), *Journal of Public Economic Theory*, Vol. 6., No. 4, 2004.

B. Reports and Articles in Conference Volumes, and Other Publications

"The Dynamics of Price Adjustment in Regulated Industries," (with E. E. Bailey), in *Proceedings of IEEE Conference on Systems Control*, 1974.

"Optimal Non-Uniform Pricing for Electricity: Some Illustrative Examples," (with R. W. Koenker), in Sichel (ed.) *Public Utility Ratemaking in an Energy-Conscious Environment*, Praeger, 1979.

"Antitrust Policy in the Airline Industry," (with S. B. Jollie), Civil Aeronautics Board, October 1982. Transmitted by the CAB to Congress as part of proposed sunset legislation.

"Deregulation and the Economic Theory of Regulation," (with W. W. Sharkey), in *Proceedings of the Eleventh Annual Telecommunications Policy Research Conference*, 1983.

"An Analysis of Tapered Access Charges for End Users," (with W. E. Taylor, D. P. Heyman and J. M. Lazorchak), published in *the Proceedings of the Eighteenth Annual Williamsburg Conference on Regulation*, H. Treeing (ed.), Michigan State, 1987.

Report to the Governor, The Task Force on Market-Based Pricing of Electricity. Co-authored with D. M. Sappington, Appendix III.

"Optional Tariffs for Access in the FCC's Price Cap Proposal," (with D. P. Heyman and W. E. Taylor), in M. Einhorn (ed.), *Price Caps and Incentive Regulation in the Telecommunications Industry*, Kluwer, 1990.

"U.S. v. Microsoft: Were the Exclusionary Practices Anticompetitive " (with Michael J. Doane), Computer Industry Newsletter, American Bar Association, Spring 2000, Vol. 5., No. 1.

"Economic Issues in U.S. vs. Microsoft," (with Michael J. Doane and A. Nayyar), *UWLA Law Review*, 2001.

"U.S. v. Microsoft: Is the Proposed Settlement in the Public Interest?" (with Michael J. Doane), *Computer Industry Newsletter*, American Bar Association, Spring 2002, Vol. 7., No. 1.

"Raising Rivals' Costs: An Analysis of Barnes and Noble' s Proposed Acquisition of Ingram Book Company," 2002, Book Chapter in *Measuring Market Power*, Edited by Daniel Slottje, North Holland (with Michael J. Doane).

Currently editing a special issue of the *Antitrust Bulletin* on vertical restraints related to pricing.

C. Books:

The Theory of Public Utility Pricing, (with S. J. Brown), Cambridge University Press, 1986. Second printing 1986. Third printing 1989.

Co-editor of *Telecommunications Demand Analysis*: *An Integrated View*, North-Holland, 1989.

Editorial Duties:

Associate Editor of the *Journal of Regulatory Economics*.

Unpublished Manuscripts:

"Equilibrium Exit from a Long-Term Contract," (with S.J. Wilkie), July, 2003. Submitted to *International Economic Review*.

"Cost Asymmetries, Mavericks and Coordinated Behavior," July 2004. Submitted to *Economics Letters*.

"The Antitrust Analysis of Bundled Loyalty Discounts," (with P. Greenlee and D. Reitman). Submitted to the *Journal of Law and Economics.*

Other Professional Activities:

Consultant to the Governor of New Jersey's Task Force on Market-Based Pricing of Electricity.

Referee for National Science Foundation and numerous professional journals.

Consulting for Bell operating companies on a variety of pricing and public policy issues.

Memberships: American Economic Association; listed in *Who's Who in the East* 1990.